

State of Illinois Model Programs of Study Guide: Health Sciences and Technology

October 2020



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About ICCB

In 1965, the Illinois General Assembly established the Illinois Community College Board to create a system of public community colleges that would be within easy reach of every resident. Today, the Illinois Community College System covers the entire state with 48 colleges and one multi-community college center in 39 community college districts. Community colleges serve nearly one million Illinois residents each year in credit and noncredit courses and many more through their public service programs.

Illinois' community colleges meet both local and statewide needs for education and workforce development through high-quality, affordable, accessible, and cost-effective programs and services. Learn more at iccb.org.



About Education Systems Center

Education Systems Center (EdSystems) is a mission-driven policy development and program implementation center based within Northern Illinois University's Division of Outreach, Engagement, and Regional Development. EdSystems' mission is to shape and strengthen education and workforce systems that prepare more young people for productive careers and lives in a global economy. EdSystems leads and manages the Illinois P-20 Council's College and Career Readiness Committee, which recently drove the development and adoption of the Postsecondary and Workforce Readiness Act (pwract.org). Learn more about EdSystems at edsystemsniu.org.



About the Model Programs of Study Guide

The Illinois Community College Board (ICCB) sponsored the development of Model Programs of Study Guides in crucial industry areas as part of the Illinois State Plan for Strengthening Career and Technical Education for the 21st Century Act (also known as the Perkins V Plan). This Guide was developed in consultation and collaboration with the Illinois State Board of Education (ISBE) through a process led and facilitated by Education Systems Center at NIU (EdSystems). As further detailed in this Guide, the process involved extensive research into labor market information and credential programs, and dialogue across secondary, postsecondary, and employer stakeholders.

The primary purposes and goals for the Model Programs of Study are to:

1. **Provide guidance and exemplars** for local programs to adopt or customize as they develop programs of study for approval as part of the Perkins V Plan.
2. **Establish a framework** for State agencies to develop and implement program supports.
3. **Identify priority dual credit courses** that are foundational to the industry area and well-situated for statewide scaling and articulation.
4. **Define the competencies** that should be sequenced across a program of study course sequence to prepare students for the future of work in that industry area.
5. **Identify entry points** for employers to support coursework and related experiences.

Model Programs of Study supplement and complement other State of Illinois career and technical education and career pathway resources, including the [ISBE Career Guide](#), [State of Illinois Career Pathways Dictionary](#), [Career Development Experience Toolkit](#), [Postsecondary and Workforce Readiness Act Recommended Technical and Essential Employability Competencies](#), [State of Illinois Workforce Development Strategic Plan](#), [Workforce Education Strategic Plan](#), and related state and regional data resources. School districts, community colleges, and their partners are encouraged to use this Guide, state resources, and local program and course information to develop materials for student and family outreach.

The full Model Programs of Study for Health Sciences and Technology, depicted graphically on pp. 4 – 5, can be used as a reference in local planning processes. The Guide then presents and describes in detail each component of the sequence, including descriptions of the underlying research, analysis, and Advisory Committee input leading to each component:

- I. Background and Process for Developing Model Programs of Study (pp. 6 – 7)
- II. Priority Occupations and Promising Credentials in Health Sciences and Technology (pp. 8 – 10)
 - a. Promising Credential Program Categories (pp. 8 – 9)
 - b. High-Priority Occupations (pp. 9 – 10)
 - c. Levels of Education Needed (p. 10)
- III. Programs of Study Sequence Description (pp. 11 – 14)
 - a. High School Career-Focused Instructional Sequence and Related Work-Based Learning (pp. 11 – 12)
 - b. Recommended High School General Education Courses (pp. 12 – 13)
 - c. Recommended First Year Postsecondary Courses (pp. 13 – 14)
- IV. Strategic Dual Credit Courses – Competency Descriptions (pp. 15 – 16)
 - a. Medical Terminology (p. 15)
 - b. Introduction to Anatomy & Physiology (p. 16)

Appendix A includes the PWR Act Recommended Technical Competencies for Health Sciences and the recommended Essential Employability Competencies. Appendix B includes the Advisory Committee membership.

Model Programs of Study Guide: Health Sciences

Education Systems Center
NORTHERN ILLINOIS UNIVERSITY



ORIENTATION / INTRODUCTION Grades 9-10

SKILL DEVELOPMENT Grades 10-12

CAPSTONE / ADVANCED Grades 12

POSTSECONDARY COURSES + Recommended 1st Year



Orientation to Health Occupations or Health Occupations Introductory Skills Development

Medical Terminology & Intro to Anatomy and Physiology

Certified Nursing Asst. Program or Pharmacy Technician Program or Other Sequence Leading to Industry Credential

Continue AS or AAS Course Sequence

Courses and Work-Based Learning Address the PWR Act Recommended Technical and Essential Employability Competencies



Career Exploration (2)
Team-Based Challenge, e.g. HOSA, SkillsUSA, and others

Team-Based Challenge, e.g. HOSA, SkillsUSA, and others
Career Development Experience or Youth Apprenticeship

Team-Based Challenge, e.g. HOSA, SkillsUSA, and others
Career Development Experience or Apprenticeship



Science Sequence

Biology >>

Chemistry >>

Biology for Science Majors
General Chemistry
Anatomy & Physiology I / II
Microbiology



Social Science Sequence

Social Science Sequence

Psychology >>

Psychology
Sociology



Algebra
Geometry

Geometry
Algebra 2
Pre-Calculus

Transitional Math: Quantitative Literacy Statistics
Pre-Calculus
Calculus >>
General Education Math

General Education Math



English Sequence

English Sequence

Transitional English
English Composition >>

English Composition
Oral Communication

>> AP or Dual Credit

📄 Dual Credit Course

📄 Dual Credit Course Affiliated With IAI Code

🏆 Course or Program Prepares for Industry Credential

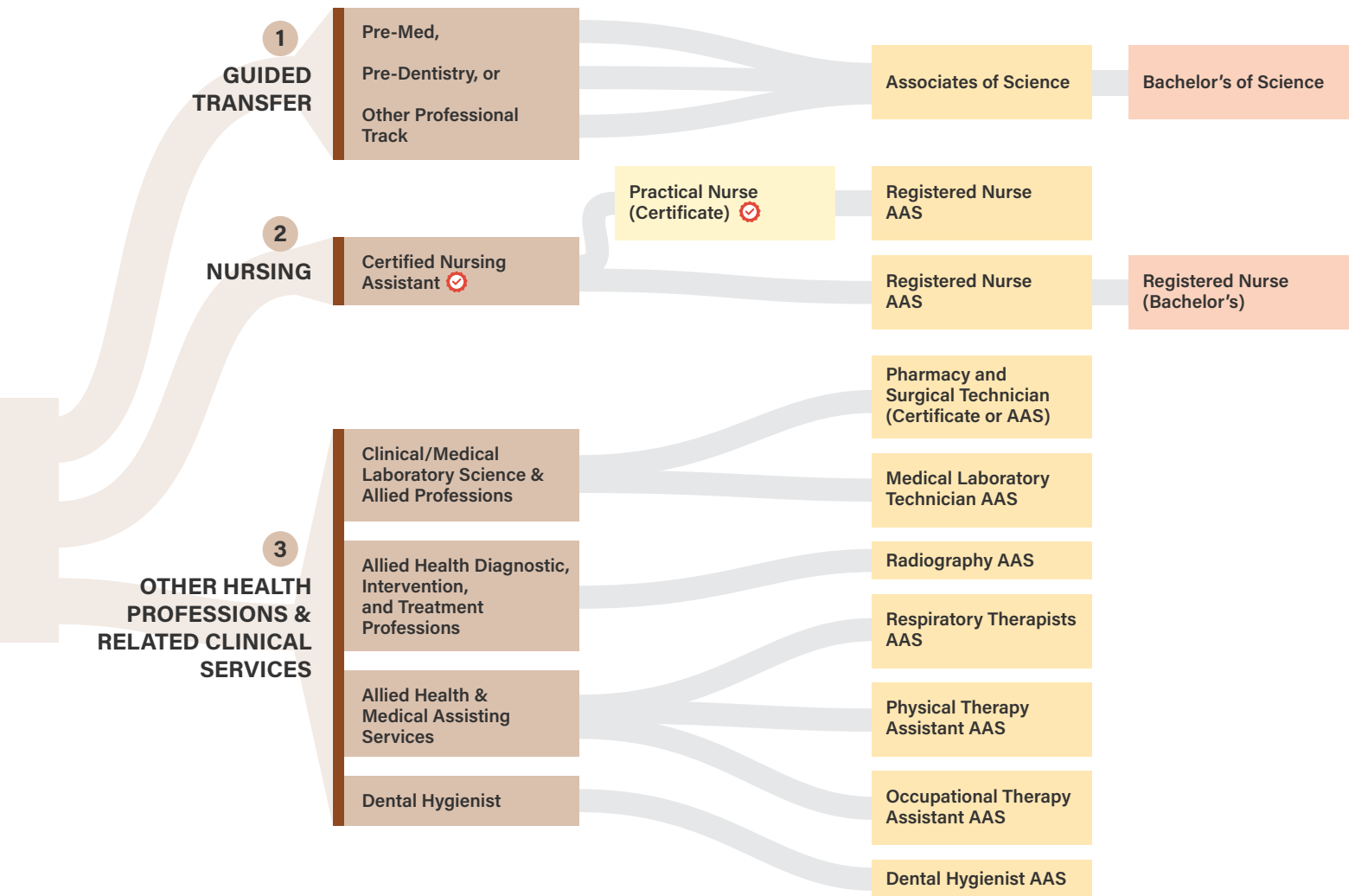
📄 Postsecondary Course Affiliated with IAI Code

🏆 College and Career Pathway Endorsement Earned

+ If courses in this column were accomplished through early college credit, students should take the next required course in the sequence or, if none, additional AAS or Major Courses



POSTSECONDARY OPTIONS



SELECTED OCCUPATIONS, WAGES, & JOB GROWTH

Program	Typical Job	Near or Above Living Wage Threshold for 1 Adult + 1 Child ¹	Median Hourly Wage ²	Growth in Illinois: Annual Job Openings ²	Growth in Illinois: % Change Over 10 years ²	Stackable?
1 Pre-Professional Track	Pediatricans, General	Y	\$66.93	30	2%	Typically Requires Bachelor's Degree & Prof. School
	Dentists	Y	\$68.79	190	9%	
2 Nursing / Registered Nurse	Nursing Assistants	N	\$13.72	7,340	5%	Typically Required for LPN or RN
	Licensed Practical and Licensed Vocational Nurses	Y	\$24.24	1,640	2%	Can Stack to RN at Select IL Colleges
	Registered Nurses	Y	\$34.74	8,690	15%	Can Stack to BSN at Select IL Colleges
3 Surgical Technology	Surgical/Pharmacy Technicians	Y	\$15.44 – \$23.05	220 – 1,600	1 – 5%	Not Typically Stackable
	Medical & Laboratory Tech.	Y	\$34.44	410	4%	
	Radiography	Y	\$30.52	380	2%	
	Respiratory Therapy	Y	\$28.62	350	17%	
	Physical Therapist Assistant	Y	\$28.60	730	20%	
	Occupational Therapy Assistant	Y	\$29.75	380	21%	
3 Dental Hygiene	Dental Hygienists	Y	\$35.68	580	9%	Not Typically Stackable

1. Living wage calculations are based on MIT's Living Calculator (livingwage.mit.edu), where the "Living Wage" for 1 Adult + 1 Child is \$26.27/hour for the state of Illinois. "Near" defined as 85% of the statewide living wage, which is \$22.33/hour

2. U.S. Department of Labor, CareerOnestop (careeronestop.org/explorecareers)



Background and Process for Developing Model Programs of Study

Programs of study are a coordinated, non-duplicative sequence of academic and technical content at the secondary and postsecondary levels that culminate in a recognized postsecondary credential. In Illinois, Perkins V programs of study are aligned with broader State policy goals to promote college and career readiness, including the State of Illinois' ESSA plan (in particular, the College and Career Readiness Indicator), the College and Career Pathway Endorsement framework and other elements of the Postsecondary and Workforce Readiness Act, the Dual Credit Quality Act, the Illinois WIOA Unified State Plan, and the State's Career Pathways Dictionary.

Process for Development

Each Model Programs of Study was developed using a data-driven, backward-mapping approach that extended from the areas of job growth down through to the high school course sequence. The specific steps in this analysis included:

1. **Identifying high-priority occupations** in the industry sector that are high-skill, high-wage, and in-demand based on federal Department of Labor data for the State of Illinois.
2. **Identifying promising postsecondary credentials** (degrees or certificates) that are broadly accessible through the Illinois community college system and lead to high-priority occupations.
3. **Mapping the stackable degrees and certificates** that progress to promising credentials.
4. **Identifying strategic community college courses** that appear across the maximum number of promising credentials, provide a broad foundation of knowledge essential to that industry sector, and are feasible for dual credit delivery.
5. **Mapping a course sequence from secondary through the first year of postsecondary** that incorporates strategic early college credit (including at least six early college credits in the career-focused course sequence) and considers industry trends and innovations in career and technical education.
6. **Defining related technical competencies** for the foundational program of study courses that can be utilized to guide course development and postsecondary articulation.



Using Department of Labor¹ data and the MIT Living Wage Calculator² for the State of Illinois as a reference, the project team identified “high-priority occupations” as jobs with a positive growth outlook and median salaries near or greater than the living wage for one adult and one child³. Thus, a “promising credential” is a degree or college certification that immediately prepares an individual for entry into a high-priority occupation or is a stackable credential for a high-priority occupation.

After identifying the promising credentials in each industry area, the project team analyzed community college programs leading to these credentials from a sampling of six to ten colleges from across Illinois, representing a mix of urban, suburban, and rural institutions⁴. EdSystems analyzed and categorized all of the career-focused and general education courses across the full sampling of the promising credential programs to determine which of these courses:

- Are most common across all programs in the sample,
- Are broadly accessible for dual credit opportunities considering prerequisites and teacher credentialing requirements, and
- Are included within the Illinois Articulation Initiative.

This analysis and categorization process led to a recommended set of “strategic” career-focused and general education courses that provide a critical foundation for the program of study sequence.

Following this internal analysis, EdSystems and ICCB convened a stakeholder Advisory Committee of secondary, postsecondary, and private sector representatives to vet the recommendations and provide expertise and guidance on the development of the Model Programs of Study (see Advisory Committee listing in Appendix B). Over multiple webinars and feedback sessions across four months, the Advisory Committee and smaller working groups provided information about industry trends that may not be reflected in the Department of Labor data, credentials and degrees that are emerging as most promising in the field, on-the-ground implementation considerations for secondary and postsecondary programs, and future of work implications for the sector. The Advisory Committee further informed important decision-points in the Model Programs of Study process, including adjusting the Model of Programs of Study course map and promising credential endpoints, selecting strategic early college credit courses, and identifying key competencies for target courses in the Model Programs of Study currently lacking current statewide articulation. The culmination of EdSystems’ analysis and the input of the Advisory Committee is reflected in the draft Model Programs of Study and course competencies included within this Guide.

¹ U.S. Department of Labor, Career Onestop: careeronestop.org/ExploreCareers/explore-careers.aspx

² livingwage.mit.edu

³ “Living Wage” for 1 Adult + 1 Child is \$26.27/hour for the whole state of Illinois. “Near” is defined as 85% of the statewide living wage, which is \$22.33/hour

⁴ For the analysis of Health Sciences and Technology, the community colleges surveyed were City Colleges of Chicago, Elgin Community College, Harper College, Illinois Central College, Rock Valley College, Sauk Valley Community College, and Shawnee Community College

Priority Occupations and Promising Credentials in Health Sciences and Technology

Health sciences and technology occupations are a significant focus of Illinois' job growth trajectory. According to the State's five-year Economic Development Plan released in 2019, Illinois is experiencing rapid growth in the healthcare sector that could result in a statewide workforce shortage for a range of occupations such as nurses, nurse practitioners, and medical/laboratory technicians⁵. Moreover, with an aging population, Illinois is more likely to experience these shortages than the typical state, with the shortage exacerbated by the recent COVID-19 public health crisis.

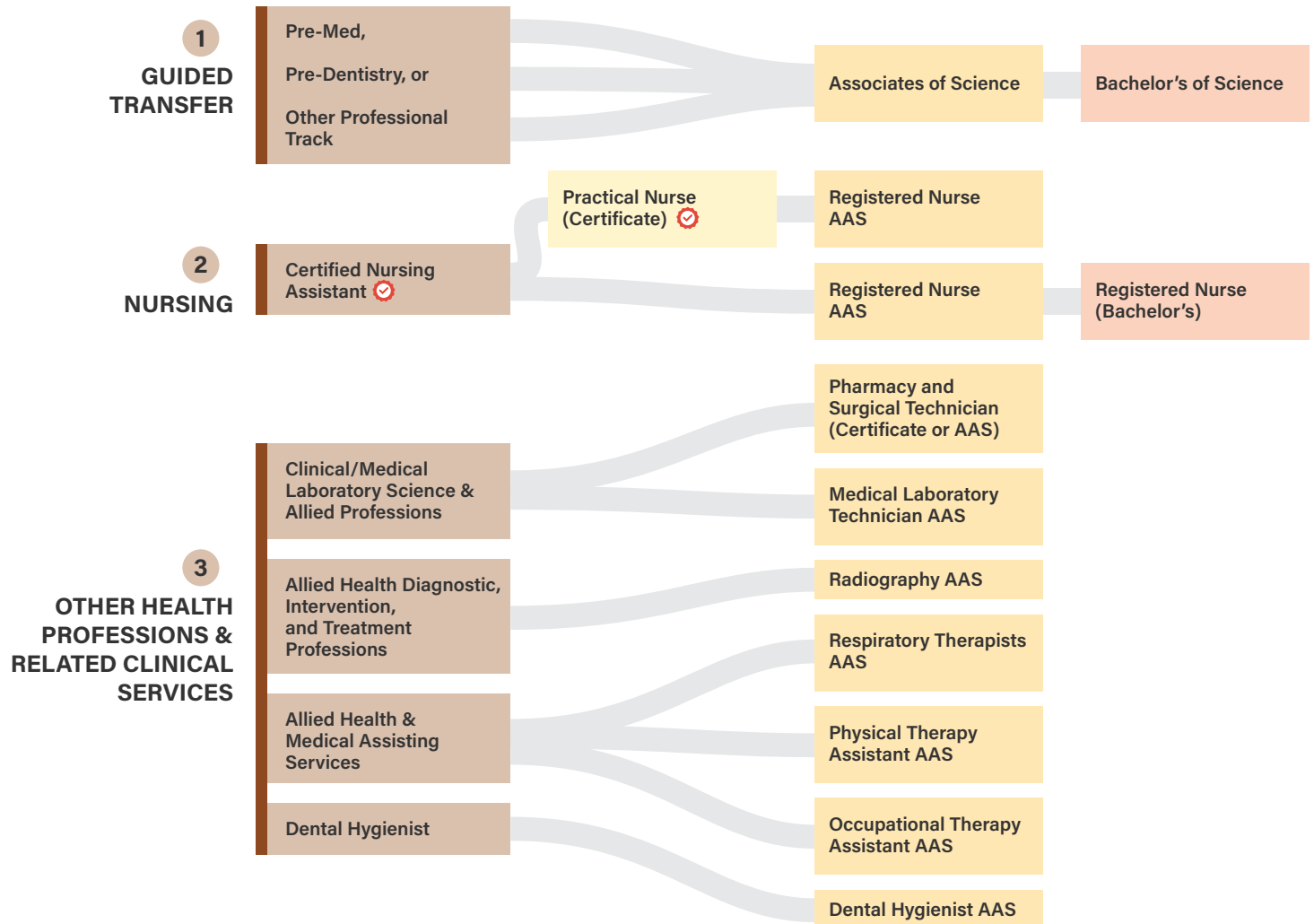
Promising Credential Program Categories

The project team's analysis of promising credentials in the health sciences sector tied to Illinois community colleges led to an identification of three overarching categories and additional subcategories:

1. **Guided Transfers** are for students seeking university degrees commonly associated with health science occupations requiring professional school, such as Doctor, Pharmacist, or Physical Therapist. A Guided Transfer typically involves a curated Associate of Science degree that transfers to a university bachelor's program or further professional degree.
2. **Nursing** credentials start by preparing students as a Certified Nursing Assistant (CNA) and then launch them into several categories, such as Licensed Practical Nurse or Registered Nurse. These credentials could culminate at community college or continue a trajectory to a bachelor's program.
3. **Other Health Professions and Related Clinical Services** credentials prepare students to enter a myriad of roles as allied health professionals, clinical/



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laboratory technicians, therapists, and therapy assistants. These credentials normally involve an Associate of Applied Science, a degree geared for immediate entry to a career. This section is broken down further using SOC code classifications:

- Clinical/Medical Laboratory Science & Allied Professions, leading to roles Surgical Technicians, Pharmacy Technicians, and Medical Laboratory Technicians.
- Allied Health Diagnostic, Intervention, and Treatment Professions leading to roles as Radiography Technicians.
- Allied Health & Medical Assisting Services leading to roles such as Respiratory Therapists, Physical Therapy Assistants, and Occupational Therapy Assistants.
- Dental Hygiene leading to roles as Dental Hygienists.

The project team notes that there is an existing or growing set of credentials such as Fire Science, Community Health Care, and Health Information Technology at various colleges around the state that are a significant

part of the health science industry. These degrees and their associated occupations, however, are highly specialized and thus have a set of required coursework and competencies that did not generally overlap with those required of the promising credentials mentioned above. For example, careers in Health Information Technology have an emphasis on computer coding or administrative procedures instead of being more focused on human biology and clinical experiences. Although also promising and associated with high-priority occupations, these credentials were excluded from the Model Programs of Study analysis to simplify the academic recommendations later described in Section III but are in no way discouraged as worthwhile career pathways and programs of study.

High-Priority Occupations

The high-priority occupations associated with each of these areas are identified in the table entitled Select Occupations, Wages, and Job Growth. The occupations affiliated with Guided Transfer and Nursing pathways typically meet the living wage and job growth criterion described in Section I. Although below the living wage threshold, Certified Nursing Assistant certification can



SELECTED OCCUPATIONS, WAGES, & JOB GROWTH

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1 Pre-Professional Track	Pediatricians, General	Y	\$66.93	30	2%	Typically Requires Bachelor's Degree & Prof. School
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	Licensed Practical and Licensed Vocational Nurses	Y	\$24.24	1,640	2%	Can Stack to RN at Select IL Colleges
	Registered Nurses	Y	\$34.74	8,690	15%	Can Stack to BSN at Select IL Colleges
3 Surgical Technology Medical & Laboratory Tech. Radiography Respiratory Therapy Physical Therapist Assistant Occupational Therapy Assistant	Surgical/Pharmacy Technicians	Y	\$15.44 - \$23.05	220 - 1,600	1 - 5%	Not Typically Stackable
	Medical and Clinical Laboratory Technologists	Y	\$34.44	410	4%	
	Radiologic Technologists	Y	\$30.52	380	2%	
	Respiratory Therapists	Y	\$28.62	350	17%	
	Physical Therapist Assistants	Y	\$28.60	730	20%	
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2. U.S. Department of Labor, CareerOnestop (careeronestop.org/explorecareers)

stack and build towards the higher-earning occupations of Licensed Practical Nurses and Registered Nurses and is thus included as a promising credential in this analysis. With Practical Nurses, individual communities should verify local demand as that job growth may be specific to certain parts of the state.

With respect to Other Health Professions and Related Clinical Services, only the following programs are included in the Model Programs of Study promising credentials analysis: Surgical/ Pharmacy Technology, Medical and Laboratory Technology, Radiography, Respiratory Therapy, Physical Therapist Assistant, and Occupational Therapy Assistant. There is a myriad of other programs in health science that could have been included but were ultimately omitted under the acceptance of the Advisory Committee. There are two main reasons for this. First, the Model Programs of Study analysis tried to emphasize those programs that are more common or accessible in Illinois community colleges, thus deemphasizing more niche programs and occupations (e.g., Mortuary Science, Diagnostic Medical Sonography). Secondly, and more importantly, programs and occupations were not included if they did not meet the promising credential criterion described in Section I. This includes programs that lead to occupations such as Dental Assistant, Paramedic, Personal Trainer, Massage Therapist, Medical Assistant, and Phlebotomist. Although these roles have large annual openings and potential job growth in Illinois, these roles typically do not meet the living wage criterion or are not easily stackable to a degree or credential that does and were thus not promising enough for inclusion in the Model Programs of Study.

Levels of Education Needed

The levels of education needed for the various pathways in the Model Programs of Study are somewhat varied, but all the high-priority occupations identified have a labor supply that overwhelmingly has “some college education” or higher. Any individuals working in high-priority occupations in health science without an associate degree were likely already existing in their role before the labor demand shifted its requirements. As a result, the Model Programs of Study recommends an Associates of Science (AS), Associates of Applied Science (AAS), or higher degree for as many of the promising credentials pathways as possible. Entry-level positions in high-earning occupations such as Pediatrician or Dentist will typically require a BS degree plus professional school. Those credentials are therefore depicted in the Model Programs of Study as a Guided Transfer pathway from an Associate of Science to a Bachelor of Science, but the specific bachelor’s degree is not specified.



⁵ State of Illinois Department of Commerce and Economic Opportunity. A Plan to Revitalize the Illinois Economy and Build the Workforce of the Future. October 2019. P. 50. Retrieved May 22, 2020, from illinois.gov/dceo/Pages/EconPlan2019.aspx.

Programs of Study Sequence Description

Generally speaking, students in a Program of Study should start a career-focused instructional sequence with an orientation course in 9th or 10th grade, with students engaging in career awareness and exploration in the middle school grades if possible. With this early start, students will have more openings in their schedule to complete skill development and capstone options across health science, obtain significant early college credits, earn valuable industry credentials, and potentially acquire the College and Career Pathways Endorsement before high school graduation.

As school districts and their community college partners develop the sequence, they should ensure that the high school coursework enables all students in the Health Sciences Program of Study to attain both the State's recommended Essential Employability and Technical Competencies for Health Sciences and Technology.

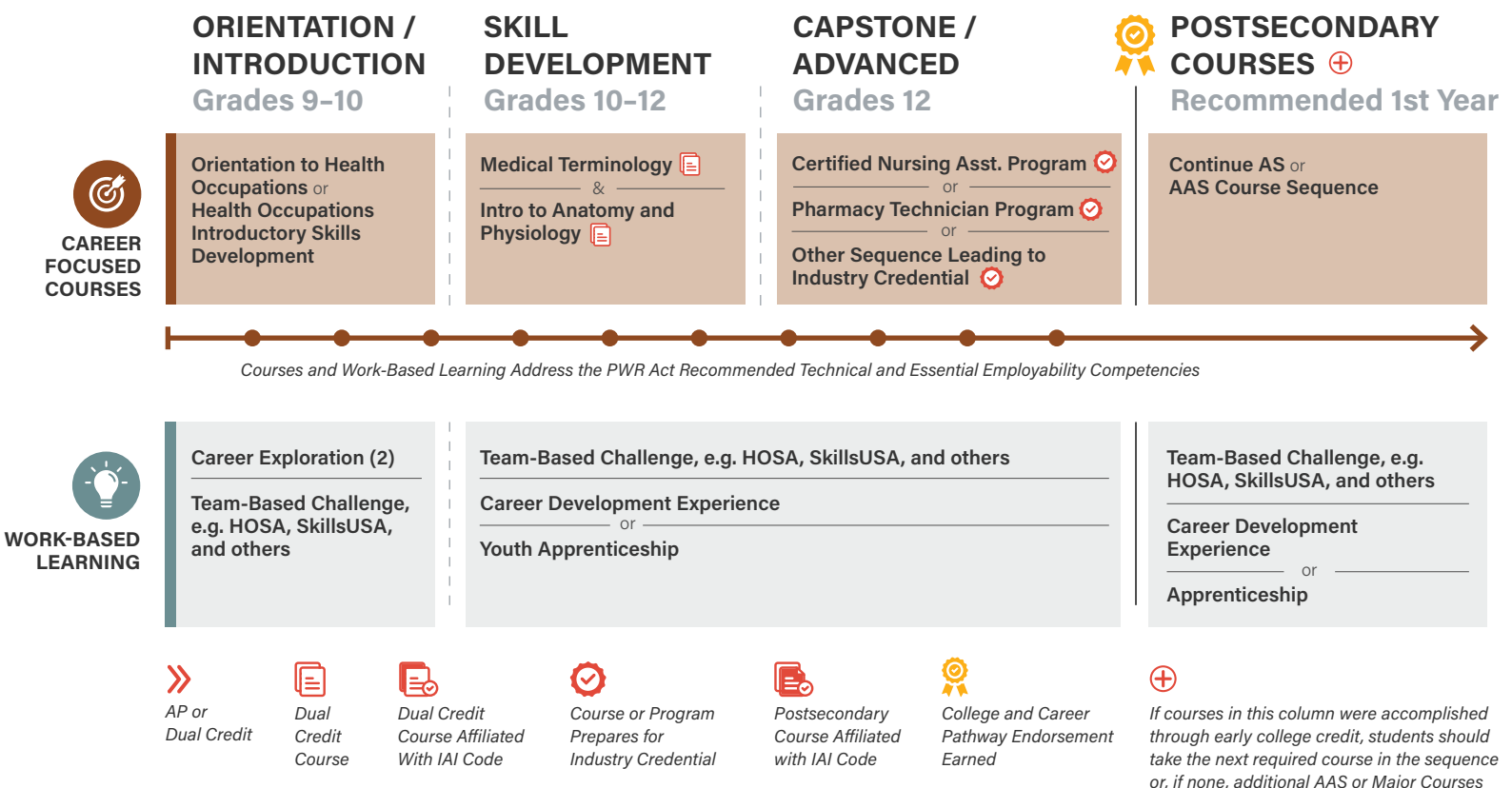
High School Career-Focused Instructional Sequence and Related Work-Based Learning Overview

The Model Programs of Study for Health Sciences and Technology begins by introducing students to the broad

range of careers in the field and highlighting a set of community college courses that are applicable to all ISBE CIP Codes for Health Sciences (51.0000 to 51.3902) while still being extremely strategic for the field of health sciences at the postsecondary level. Upon completion of those initial courses, students can pursue culminating their secondary sequence with an industry credential in health science that further deepens their understanding of the profession through work-based learning. The credential opens the possibility of employment in the field while students simultaneously pursue other promising credentials. Within postsecondary school, students will become fully prepared for careers in health science by earning promising credentials in Nursing or other health professions and related clinical services, including Guided Transfers to professional school occupations.

Orientation

At the secondary level, ISBE has two proposed Career and Technical Education (CTE) courses that could introduce students to the health science career broadly: Orientation to Health Occupations and Health Occupations Introductory Skill Development. Both of these courses apply to all facets of the Model Programs of Study and



should be chosen based on local capabilities and access. Some community colleges offer a similar introductory course at the postsecondary level but, because student access and availability to that varies greatly across colleges, it is not included in the model. If local communities have a robust partnership with their local community college, they should explore a postsecondary orientation or introductory course that could be offered to students as dual credit as early as 9th or 10th grade. At the secondary level, these courses would likely fulfill the ISBE CTE matrix of Group 1 or 2.

Skill Development

The skill development course recommendations in the Model Programs of Study are primarily Medical Terminology and Introduction to Anatomy and Physiology, offered as early college classes. Medical Terminology is offered as an ISBE Group 2 CTE course in the health science matrix, but districts should primarily pursue it as a dual credit offering. The reason for this is that Medical Terminology is offered broadly at all Illinois community colleges, applies to many health science postsecondary pathways, and is one of the most accessible courses in terms of dual credit. Generally speaking, Medical Terminology in Illinois colleges does not have any additional courses as prerequisites, meaning students can begin their familiarity with high-level health science competencies with this course⁶. Additionally, Medical Terminology can be typically taught for dual credit by anyone with a bachelor's degree in Nursing, Allied Health or related field combined with some years of clinical experience and/or a current license to practice.

After General/Introductory Biology, courses in Anatomy and Physiology were the most frequent postsecondary courses required for a promising credential in health science. Offering the course, however, requires teacher credentials with a master's degree and/or a school with significant laboratory infrastructure. Thus, **Anatomy and Physiology might be more accessible to students if offered as a dual enrollment course** (with a college professor as the teacher of record at a local college campus) instead of a dual credit course (typically taught as a part of a high school curriculum with a credentialed high school teacher). Like Medical Terminology, Anatomy and Physiology is now offered as an ISBE CTE course in the health science matrix but should be pursued as early college credit if possible as it greatly prepares a student for successful and varied career options in health science.

Most community colleges offer Anatomy and Physiology as a one- or two-semester option; the two-semester sequence is more frequently required in promising credentials. The

advisory committee considered both recommendations for the Model Programs of Study and weighed several pros and cons with each option. The single semester version of Anatomy and Physiology may more easily fit into a student's high school schedule, but the course content may be difficult to properly digest in a single semester for a high school student. The two-semester version may be difficult to fit into a student schedule in addition to what is already recommended in the Model Programs of Study and still may be overwhelming. Ultimately, the advisory committee settled on recommending that high schools teach Anatomy and Physiology either as a year-long or single-semester course, but in both cases, to be articulated as the one-semester college version of the course. This compromise reflects the belief that, as a best practice, the single-semester version of the course can serve as solid preparation for the more robust two-semester sequence that students may nevertheless be required to take at the postsecondary level. We call this course Introduction to Anatomy and Physiology and it would also fulfill the ISBE Group 2 CTE matrix requirement.

Capstone

At the capstone level, the project team wants to emphasize that a Work-Based Learning experience could take the place of a course entirely, depending on student schedule and completion of graduation requirements. The Model Programs of Study further recommends that students attempt to acquire an industry credential before graduating high school. Certified Nursing Assistant is specifically listed in the Model Programs of Study as an option because that particular credential stacks to the promising credentials already mentioned in Nursing. Local partnerships between secondary districts and community colleges should also pursue any alternative industry credentials available, such as Pharmacy Technician, Emergency Medical Technician, or even simpler ones such as First Aid or CPR certifications. However, those opportunities should be driven by the local partnerships and with an eye to high-priority occupations as much as possible.

Recommended High School General Education Courses

The Model Programs of Study for Health Sciences and Technology identifies several critical considerations for general education coursework before graduating high school. The courses mentioned here are frequent requirements for many postsecondary promising credentials in health science and enhances students' opportunities for postsecondary success in addition to the career-focused courses already delineated. The general

education recommended courses are the following:


























- In **science**, students should complete Biology and Chemistry as either an Advanced Placement or dual credit course where possible.
- In **social science**, students prepared for college-level coursework in their senior year should enroll in a dual credit or Advanced Placement Psychology course if available.
- In **math**, students should complete the highest math course possible while in high school and be preparing for a General Education Math course sequence at the postsecondary level. Students that do not demonstrate readiness for an early college math course during their senior year of high school should enroll in a Transition to Quantitative Literacy/

Statistics Transitional Math Course that will guarantee placement into postsecondary math courses.

- In **English**, students prepared for college-level coursework in their senior year should enroll in a dual credit English Composition or Advanced Placement English Language and Composition course if available. Students who are not prepared for college-level coursework should enroll in a Transitional English course that guarantees placement into the partner community college's English Composition course.

Recommended First Year Postsecondary Courses

The recommended first-year postsecondary courses in the Model build upon the knowledge and skills recommended at the capstone level. As with other high school programs, community colleges should pursue opportunities to integrate and align health science coursework and work-

	ORIENTATION / INTRODUCTION Grades 9–10	SKILL DEVELOPMENT Grades 10–12	CAPSTONE / ADVANCED Grades 12	POSTSECONDARY COURSES  Recommended 1st Year
 SCIENCE	Science Sequence	Biology 	Chemistry 	Biology for Science Majors  General Chemistry  Anatomy & Physiology I / II Microbiology
 SOCIAL SCIENCE	Social Science Sequence	Social Science Sequence	Psychology 	Psychology  Sociology 
 MATH	Algebra Geometry	Geometry Algebra 2 Pre-Calculus	Transitional Math: Quantitative Literacy Statistics Pre-Calculus Calculus  General Education Math 	General Education Math 
 ENGLISH	English Sequence	English Sequence	Transitional English English Composition 	English Composition  Oral Communication 
	 AP or Dual Credit	 Dual Credit Course	 Dual Credit Course Affiliated With IAI Code	 Course or Program Prepares for Industry Credential
			 Postsecondary Course Affiliated with IAI Code	 College and Career Pathway Endorsement Earned
				 If courses in this column were accomplished through early college credit, students should take the next required course in the sequence or, if none, additional AAS or Major Courses

based learning opportunities. Students pursuing a Guided Transfer or any other Associate of Applied Science (AAS) should initiate or continue to take career-focused courses in the associate degree or certificate sequence.

In the general education course areas, students will start with the required 100-level courses. In science, that means courses that are strategic for many promising credentials and also transferable through the Illinois Articulation Initiative (IAI). The Model Programs of Study recommends General/Introductory Biology, Anatomy and Physiology I and II, Chemistry, and Microbiology. In social

science, that means Psychology and Sociology. In English/communications, both Oral Communication and English Composition are recommended because of their frequency in promising credentials. If the 100-level courses have been accomplished through early college credit, students will take the next required course in the subject or, if none, additional AAS or courses in their major.

⁶ Many colleges, however, may place restrictions on Medical Terminology that are in line with other dual credit courses, such as minimum student GPA, or college-level English placement.



Priority Dual Credit Courses: Competency Descriptions

As mentioned, EdSystems and ICCB convened a stakeholder Advisory Committee of secondary, postsecondary, and private sector representatives to vet the Model Program of Study recommendations. A smaller working group further convened to identify key competencies for the targeted early college courses in the Model Program of Study currently lacking current statewide articulation. In health sciences, those courses were Medical Terminology and Anatomy and Physiology (1 Semester).

MEDICAL TERMINOLOGY <i>Key Competencies</i>			
Building and Defining Words	<ul style="list-style-type: none"> ▪ Students can correctly spell and pronounce medical language relating to anatomical, diagnostic, and symptomatic medical terms. ▪ Students can correctly construct, identify, define, and analyze medical terms and language, using word roots, prefixes, suffixes, and combining forms. ▪ Students can recognize and translate medical abbreviations. 		
Anatomy and Body Structure	<ul style="list-style-type: none"> ▪ Students will identify and describe components of the human body in relation to other structures or locations in the body, incorporating anatomical planes, directional terms, quadrants, and regions. ▪ Students can identify major human body structures and organs, their function, and their related medical terms. 		
Communicate Medical Terms	<ul style="list-style-type: none"> ▪ Students will use their understanding of basic medical terminology, including abbreviations, acronyms, and diagnostic terms, to communicate effectively with healthcare personnel and patients. 		
Diagnostic Terminology	<ul style="list-style-type: none"> ▪ Students will define and describe medical terminology relating to common health conditions and diagnostic practices including tests, procedures, symptoms, and diagnoses. 		
Understanding Medical Records and Case Studies	<ul style="list-style-type: none"> ▪ Students will use electronic resources and research methods to read medical writings and understand the medical information contained in them. ▪ Students will analyze and interpret patient records, lab reports, diagnostic summaries, etc., and the information contained in them. 		
Topics	<p>At minimum, courses should cover the following topics:</p> <table style="width: 100%; border: none;"> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> ▪ Reproductive Systems: Male and Female ▪ Senses: Eye and Ear ▪ Muscoskeletal System ▪ Urinary System ▪ Respiratory System </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> ▪ Nervous System ▪ Integumentary System ▪ Digestive System ▪ Cardiovascular System ▪ Lymphatic and Immune System ▪ Endocrine System </td> </tr> </table>	<ul style="list-style-type: none"> ▪ Reproductive Systems: Male and Female ▪ Senses: Eye and Ear ▪ Muscoskeletal System ▪ Urinary System ▪ Respiratory System 	<ul style="list-style-type: none"> ▪ Nervous System ▪ Integumentary System ▪ Digestive System ▪ Cardiovascular System ▪ Lymphatic and Immune System ▪ Endocrine System
<ul style="list-style-type: none"> ▪ Reproductive Systems: Male and Female ▪ Senses: Eye and Ear ▪ Muscoskeletal System ▪ Urinary System ▪ Respiratory System 	<ul style="list-style-type: none"> ▪ Nervous System ▪ Integumentary System ▪ Digestive System ▪ Cardiovascular System ▪ Lymphatic and Immune System ▪ Endocrine System 		

INTRODUCTION TO ANATOMY AND PHYSIOLOGY

Key Competencies

<p>Biological Systems, Molecular Interactions, and Cellular Physiology</p>	<ul style="list-style-type: none"> Students will have a working understanding of basic chemistry as it relates to cellular interactions. Students can differentiate the various parts, structures, and molecules of various human cells and describe their functions.
<p>Anatomical Systems and Organs</p>	<ul style="list-style-type: none"> Students can identify and describe key organ systems using 2- and 3-dimensional models and diagrams as well as through dissections of cadavers. Students will be able to define and describe homeostasis and its applicability to various bodily and cellular systems. Students can demonstrate a working knowledge of the anatomical features of key human organ systems, including their related cells and tissues, and describe those systems in a state of physiological homeostasis.
<p>Laboratory Skills and Techniques</p>	<ul style="list-style-type: none"> Students can display a working knowledge of basic laboratory techniques and procedures including the use of microscopes, dissection, safety, and clean up. Students can conduct various laboratory activities on anatomical models and cadavers and interpret recorded data.
<p>Scientific Inquiry and Communication</p>	<ul style="list-style-type: none"> Students can demonstrate the ability to acquire information from scientific descriptions, medical records, and research documents and use that information to make conclusions regarding anatomical structures and physiological processes. Students can use their understanding of basic biological, anatomical, and physiological terminology, including abbreviations, acronyms, and diagnostic terms, to communicate effectively with healthcare and scientific personnel.
<p>Physiological Processes</p>	<p>Through lectures and laboratories, students demonstrate a familiarity with the following:</p> <ul style="list-style-type: none"> Homeostasis Blood Pressure Regulation Membrane Transport Blood Cell Formation Bone Formation Gas Exchange Muscle Contraction Nutrient Absorption Nerve Impulse Conduction Urine Formation Hormone Regulation Reproductive Cycles Cardiac Physiology Gamete Production Capillary Exchange Pregnancy & Development
<p>Topics</p>	<p>At minimum, courses should cover the following topics:</p> <ul style="list-style-type: none"> Introductory Chemistry for A&P Cell Structure and Function Nervous System and Special Senses Digestive System and Metabolism Cardiovascular System Respiratory System Reproductive System Muscular System Endocrine System Urinary System Tissues Skin and the Integumentary System Skeletal System

APPENDIX A.1: PWR Act Recommended Technical Competencies for Health Sciences

HEALTH SCIENCES & TECHNOLOGY

TOP 10 TECHNICAL COMPETENCY STATEMENTS FOR HEALTH SCIENCES & TECHNOLOGY

Medical Terminology	Students can use their understanding of basic medical terminology, including abbreviations, acronyms, and diagnostic terms, to communicate effectively with healthcare personnel and patients.
Healthcare Industry & Culture	Students can use their understanding of the basic components and culture of the health industry to understand the purpose and function of key stakeholders, practices, practitioners, and regulations.
Healthcare Delivery Practices	Students can use their understanding of the practices, procedures, and personnel involved in delivering quality patient care to evaluate the appropriateness of a plan, instructions, or assigned task.
Healthcare Industry Ethics	Students can use their understanding of confidentiality, morality, and legal concepts to evaluate and apply the merits, risks, and social concerns to workplace decisions.
Health Professions Licensure	Students can use their understanding of education requirements, licensure, and certification to ensure proper adherence to regulations that guide service delivery.
Emergency Response	Students can use their understanding of emergency procedures and protocols to respond to and expedite safety in an emergency situation.
Healthcare Confidentiality	Students can use their understanding of HIPPA to adhere to legal requirements and maintain confidentiality.
Healthcare Personnel & Roles	Students can use their understanding of the practices, procedures, and personnel used to deliver quality patient care to identify one's role on a team and within the overall health environment.
Healthcare Sanitation	Students can use their understanding of sanitation and health regulations to ensure that healthcare facilities and tools meet standards for cleanliness.
Healthcare Rules & Regulation	Students can use their understanding of basic laws and regulations (Patient Bill of Rights, CLIA, EMTALA, OSHA, etc.) to meet accreditation standards and to obey the law.



APPENDIX A.2: PWR Act Essential Employability Competencies

TOP 10 CROSS-SECTOR ESSENTIAL EMPLOYABILITY COMPETENCY STATEMENTS

Teamwork & Conflict Resolution	Students can use their understanding of working cooperatively with others to complete work assignments and achieve mutual goals.
Communication	<p>Verbal: Students can use their understanding of English grammar and public speaking, listening, and responding, convey an idea, express information, and be understood by others.</p> <p>Written: Students can use their understanding of standard business English to ensure that written work is clear, direct, courteous, and grammatically correct.</p> <p>Digital: Students can use their understanding of email, keyboarding, word processing, and digital media to convey work that is clear, direct, courteous, and grammatically correct.</p>
Problem Solving	Students can use their critical thinking skills to generate and evaluate solutions as they relate to the needs of the team, customer, and company.
Decision Making	Students can use their understanding of problem solving to implement and communicate solutions.
Critical Thinking	Students can use their understanding of logic and reasoning to analyze and address problems.
Adaptability & Flexibility	Students can use their understanding of workplace change and variety to be open to new ideas and handle ambiguity.
Initiative & Self-Drive	Students can use their understanding of goal setting and personal impact to achieve professional goals and understand personal impact.
Reliability & Accountability	Students can use their understanding of commitment, time management, and follow through to ensure that a professional team functions properly and meets collective goals.
Cultural Competence	Students can use their understanding of diversity and inclusion to communicate and work effectively across a multitude of abilities, cultures, and backgrounds.
Planning & Organizing	Students can use their understanding of time management to plan effectively and accomplish assigned tasks.

APPENDIX B: Advisory Committee Membership

Natasha Allen

*Director for Career & Technical Education
Illinois Community College Board*

Elias Alonzo

*Principal, Health Sciences Career Academy
Instituto Del Progreso Latino*

Rhonda Bell

*Career and Technical Education Manager
Chicago Public Schools*

Kathleen Brannigan

*Business Relations Specialist
Chicago Cook Workforce Partnership*

William Chamberlin, MD

*Internist
University of Illinois Chicago*

Sue Czerwinski

*Dean of Career Programs
Lewis and Clark Community College*

Jon Furr

*Executive Director
Education Systems Center at Northern Illinois University*

Angela Gerberding

*Associate Director for Integrated Career Programs
Illinois Community College Board*

Juan Jose Gonzalez

*Pathways Director
Education Systems Center at Northern Illinois University*

Jeffrey Gregor

*Dean for Health Professions and Public Service
Waubensee Community College*

Wendee Guth

*Dean of Health Careers
Illinois Central College*

Nick Haubach

*Chief Human Resources Officer
University of Illinois Hospital & Health Sciences System*

Danielle Hauser

*Director of Instructional Improvement
Township High School District 211*

Jean Hebeisen

*Director of Education & Accreditation
Illinois State Medical Society*

Jeffrey Hollenstein

*Career Pathways Lead Teacher
North Chicago Community High School*

Becky Holton

*Director of the Interprofessional Healthcare Workforce Institute
Rosalind Franklin University of Medicine and Science*

Nicole Joerger

*Associate Director for Career & Technical Education
Illinois Community College Board*

Lori Laredo

*Assistant Superintendent/Principal
East Peoria Community High School*

Cynthia Maskey

*Dean Health Professions
Lincoln Land Community College*

Whitney Mehaffy

*Health Science Technology Principal Consultant
Illinois State Board of Education*

Michelle Miller

*Healthcare Pathway Instructor
North Chicago Community High School*

Pamela Mitchell-Boyd

*System Director for Diversity, Inclusion & Language Services
AMITA Health*

Mischelle Monagle

*Associate Dean of Nursing
Illinois Central College*

Julie Mueller

*Director of Recruitment
OSF HealthCare*

Julie Obermark

*Dean of Nursing & Health Sciences
Kaskaskia College*

David Osborne

*Principal Consultant
Illinois State Board of Education*

Paul Priester

*School of Interdisciplinary Health Professions Chair
Northern Illinois University*

Rachel Reichlin

*Program Officer
Michael Reese Health Trust*

Amy Romito

*CTE EFE Systems Manager
Chicago Public Schools*

April Sonnefeldt

*Executive Director
Illinois HOSA*

Whitney Thompson

*Senior Director for Career & Technical Education
Illinois Community College Board*

Roy Walker

*Dean of the Health Career Program
Malcolm X College*